

Draft Environmental Assessment

Nooksack River – Hannegan Levee Rehabilitation of Flood Control Works Whatcom County, Washington



July 2005



**US Army Corps
of Engineers®**
Seattle District

**Nooksack River Hannegan Levee
Rehabilitation of Flood Control Works
Environmental Assessment
July 2005**

Responsible Agency: The responsible agency for rehabilitation of flood control works is the U.S. Army Corps of Engineers, Seattle District.

Abstract:

This Environmental Assessment (EA) evaluates the environmental effects of the proposed repair of Hannegan levee, located on the Nooksack River near Lynden, Washington. The levee is located on the Left Bank of the Nooksack River extending from about river mile 18.0 to 19.6, near the town of Lynden. The damaged section extends approximately 750 linear feet along an outside bend of the river upstream of the Hannegan Road bridge. The levee was constructed of earthen materials with a riverward and back slopes of about 2H: 1V. This section of the levee has been scoured to an almost vertical slope at present. There is also an approximately 350-foot segment where excessive sediment has built up on the levee. The levee protects the only intake structure for the City of Lynden's water supply, Hannegan Road, 1815 acres of agricultural land, and a private residence.

The U.S. Army Corps of Engineers, Seattle District, is proposing the following project under the authority of Public Law 84-99 (33 USCA 701n). The proposed project consists of rebuilding the riverward slope back to 2H: 1V, reshaping the back slope, armoring the riverward slope, and adding native shrubs along with willow plantings. The proposed levee rehabilitation will not encroach upon the current wetted river channel (see construction drawings).

The proposed project will not constitute a major Federal action significantly affecting the quality of the human environment.

This document is also available online at:

<http://www.nws.usace.army.mil/ers/envirdocs.html>

Please send questions and requests for additional information to:

Mr. Chuck Ebel
Environmental Resources Section
U.S. Army Corps of Engineers
P.O. Box 3755
Seattle, Washington 98124-3755
Charles.j.ebel@usace.army.mil
206-764-3626

TABLE OF CONTENTS

| | |
|---|-----------|
| 1. INTRODUCTION | 1 |
| 1.1 LOCATION AND SETTING..... | 1 |
| 1.2 BACKGROUND | 2 |
| 1.3 PROJECT PURPOSE AND NEED | 3 |
| 1.4 AUTHORITY | 3 |
| 2. DESCRIPTION OF THE PROPOSED ACTION | 3 |
| 2.1 PROPOSED ACTION | 3 |
| 3. NON-SELECTED ALTERNATIVES | 4 |
| 3.1 NO FEDERAL ACTION | 4 |
| 3.1.1 <i>Effects of No Federal Action.</i> | 4 |
| 3.2 NON-STRUCTURAL ALTERNATIVE | 4 |
| 3.3 SETBACK ALTERNATIVE | 5 |
| 3.4 RECOMMENDED PLAN - REPAIR THE EROSION ALTERNATIVE | 5 |
| 4. AFFECTED ENVIRONMENT | 5 |
| 4.1 GENERAL | 5 |
| 4.2 HYDROLOGY, SOILS AND TOPOGRAPHY | 6 |
| 4.3 VEGETATION..... | 6 |
| 4.4 FISH AND WILDLIFE | 7 |
| 4.5 THREATENED AND ENDANGERED SPECIES | 7 |
| 4.6 CULTURAL RESOURCES | 9 |
| 4.7 WATER QUALITY | 10 |
| 4.8 AIR QUALITY AND NOISE..... | 11 |
| 4.9 UTILITIES AND PUBLIC SERVICES | 11 |
| 4.10 LAND USE..... | 11 |
| 4.11 RECREATION..... | 11 |
| 4.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE | 12 |
| 4.13 AESTHETICS..... | 12 |
| 5. EFFECTS OF THE ALTERNATIVES | 12 |
| 5.1 GENERAL | 12 |
| 5.1.1 <i>Proposed Alternative</i> | 12 |
| 5.1.2 <i>No-Action Alternative</i> | 12 |
| 5.2 HYDROLOGY, SOILS AND TOPOGRAPHY | 12 |
| 5.2.1 <i>Proposed Alternative</i> | 12 |
| 5.2.2 <i>No-Action Alternative</i> | 13 |
| 5.3 VEGETATION..... | 13 |
| 5.3.1 <i>Proposed Alternative</i> | 13 |
| 5.3.2 <i>No-Action Alternative</i> | 13 |
| 5.4 FISH AND WILDLIFE | 13 |
| 5.4.1 <i>Proposed Alternative</i> | 13 |
| 5.4.2 <i>No-Action Alternative</i> | 13 |
| 5.5 THREATENED AND ENDANGERED SPECIES | 14 |
| 5.5.1 <i>Proposed Alternative</i> | 14 |
| 5.5.2 <i>No-Action</i> | 15 |
| 5.6 CULTURAL RESOURCES | 15 |
| 5.6.1 <i>Proposed Alternative</i> | 15 |
| 5.6.2 <i>No-Action Alternative</i> | 15 |
| 5.7 WATER QUALITY | 15 |
| 5.7.1 <i>Proposed Alternative</i> | 15 |
| 5.7.2 <i>No-Action Alternative</i> | 15 |

| | |
|--|-----------|
| 5.8 AIR QUALITY AND NOISE..... | 16 |
| 5.8.1 <i>Proposed Alternative</i> | 16 |
| 5.8.2 <i>No-Action Alternative</i> | 16 |
| 5.9 UTILITIES AND PUBLIC SERVICES | 16 |
| 5.9.1 <i>Proposed Alternative</i> | 16 |
| 5.9.2 <i>No-Action Alternative</i> | 16 |
| 5.10 LAND USE..... | 16 |
| 5.10.1 <i>Proposed Alternative</i> | 16 |
| 5.10.2 <i>No-Action Alternative</i> | 17 |
| 5.11 RECREATION..... | 17 |
| 5.11.1 <i>Proposed Alternative</i> | 17 |
| 5.11.2 <i>No-Action Alternative</i> | 17 |
| 5.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE | 17 |
| 5.12.1 <i>Proposed Alternative</i> | 17 |
| 5.12.2 <i>No-Action Alternative</i> | 17 |
| 5.13 AESTHETICS..... | 17 |
| 5.13.1 <i>Proposed Alternative</i> | 17 |
| 5.13.2 <i>No-Action Proposed Alternative Aesthetics</i> | 17 |
| 6. UNAVOIDABLE ADVERSE EFFECTS | 17 |
| 7. COORDINATION..... | 17 |
| 8. CUMULATIVE EFFECTS..... | 18 |
| 9. ENVIRONMENTAL COMPLIANCE | 19 |
| 9.1 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) (42 USC 4321 ET SEQ.) | 19 |
| 9.2 ENDANGERED SPECIES ACT OF 1973, AS AMENDED (16 USC 1531-1544) | 19 |
| 9.3 CLEAN WATER ACT, AS AMENDED (33 USC 1251 ET SEQ.)..... | 19 |
| 9.4 RIVERS AND HARBORS ACT (33 U.S.C. 403) | 19 |
| 9.5 COASTAL ZONE MANAGEMENT ACT (16 U.S.C. 1451-1465) | 19 |
| 9.6 NATIONAL HISTORIC PRESERVATION ACT) (16 USC 470 ET SEQ., 110)..... | 20 |
| 9.7 CLEAN AIR ACT AS AMENDED (42 USC 7401, ET SEQ.) | 20 |
| 9.8 WILD AND SCENIC RIVERS ACT (16 U.S.C. 1271-1287)..... | 21 |
| 9.9 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT (16 USC 701-715) | 21 |
| 9.10 FISH AND WILDLIFE COORDINATION ACT, AS AMENDED (16 USC 661 ET SEQ.) | 21 |
| 9.11 WATERSHED PROTECTION AND FLOOD PREVENTION ACT, AS AMENDED (16 U.S.C. 1001 ET SEQ.)..... | 21 |
| 9.12 FARMLAND PROTECTION POLICY ACT (7 U.S.C. 4201, ET SEQ.)..... | 22 |
| 9.13 RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) (42 USC 6901 ET SEQ.) | 22 |
| 9.14 EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT (24 MAY 1977)..... | 22 |
| 9.15 EXECUTIVE ORDER 12898, ENVIRONMENTAL JUSTICE | 22 |
| 9.16 EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS, MAY 24, 1977 | 22 |
| 9.17 TREATY RIGHTS..... | 23 |
| 10. CONCLUSION | 25 |
| 11. REFERENCES | 26 |
| 13. APPENDICES..... | 27 |
| <u>APPENDIX A</u> | 1 |
| REQUESTS FOR CORPS ASSISTANCE AND OTHER CORRESPONDENCE | 1 |
| <u>APPENDIX B</u> | 1 |
| ESA CONSULTATION DOCUMENT..... | 1 |
| <u>APPENDIX C</u> | 1 |
| PROJECT MAP AND DRAWING..... | 1 |
| <u>APPENDIX D</u> | 1 |
| DRAFT FONSI..... | 1 |

1. INTRODUCTION

This Environmental Assessment (EA) evaluates the environmental effects of the proposed repair and reconstruction of Hannegan levee, located on the Nooksack River near Lynden, Washington. This levee is on the left bank at approximately River Mile 19.6, upstream of the Hannegan Road Bridge. The levee protects the only intake structure for the City of Lynden's water supply, Hannegan Road, 1815 acres of agricultural land, and a private residence. The Nooksack River rose above the zero damage flood stage in November 2004 resulting in significant erosion to approximately 750 linear feet of the levee on the riverward slope and 1000 linear feet on the landward slope. The severe erosion resulted in armor rock being lost and the levee has been scoured to an almost vertical slope in the damaged segment. There is also an approximately 350-foot segment where excessive sediment has built up on the levee creating a bench.

The Corps has determined that the levee is in need of permanent repair. If no action is taken to contain the floodwaters, there is a high potential that during the upcoming flood season, the river would overflow the levee again, posing a major threat to the water supply intake, Hannegan Road and other property. The proposed project consists of rebuilding the riverward slope back to 2H: 1V, reshaping the back slope, armoring the riverward slope, and adding native shrubs. One row of willows will be planted in a soil lift just above ordinary high water, and the entire riverward face will also be planted with willows in a random fashion in areas where the riverward slope is being repaired. The proposed levee rehabilitation will not encroach upon the current wetted river channel. In the 350 ft bench segment of the levee, the overburden will be removed and the area will be planted in native shrubs (Appendix B). Planting of the bench area will require approximately 500 plants consisting of at least 3 of following species: snowberry (*Symphoricarpos albus*), Indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), nootka rose (*Rosa nutkana*), and thimbleberry (*Rubus parviflorus*).

The proposed work is not expected to significantly affect the quality of the human environment because the damaged section of shoreline will be returned to the pre-flood condition.

1.1 Location and Setting

The project is located on the left bank of the Nooksack River at RM 19.6, approximately 1 mile south of the city of Lynden, Washington, within Whatcom County, Washington at Range 3 East, Township 40 North, Sections 21. A location map can be found in Figure 1.

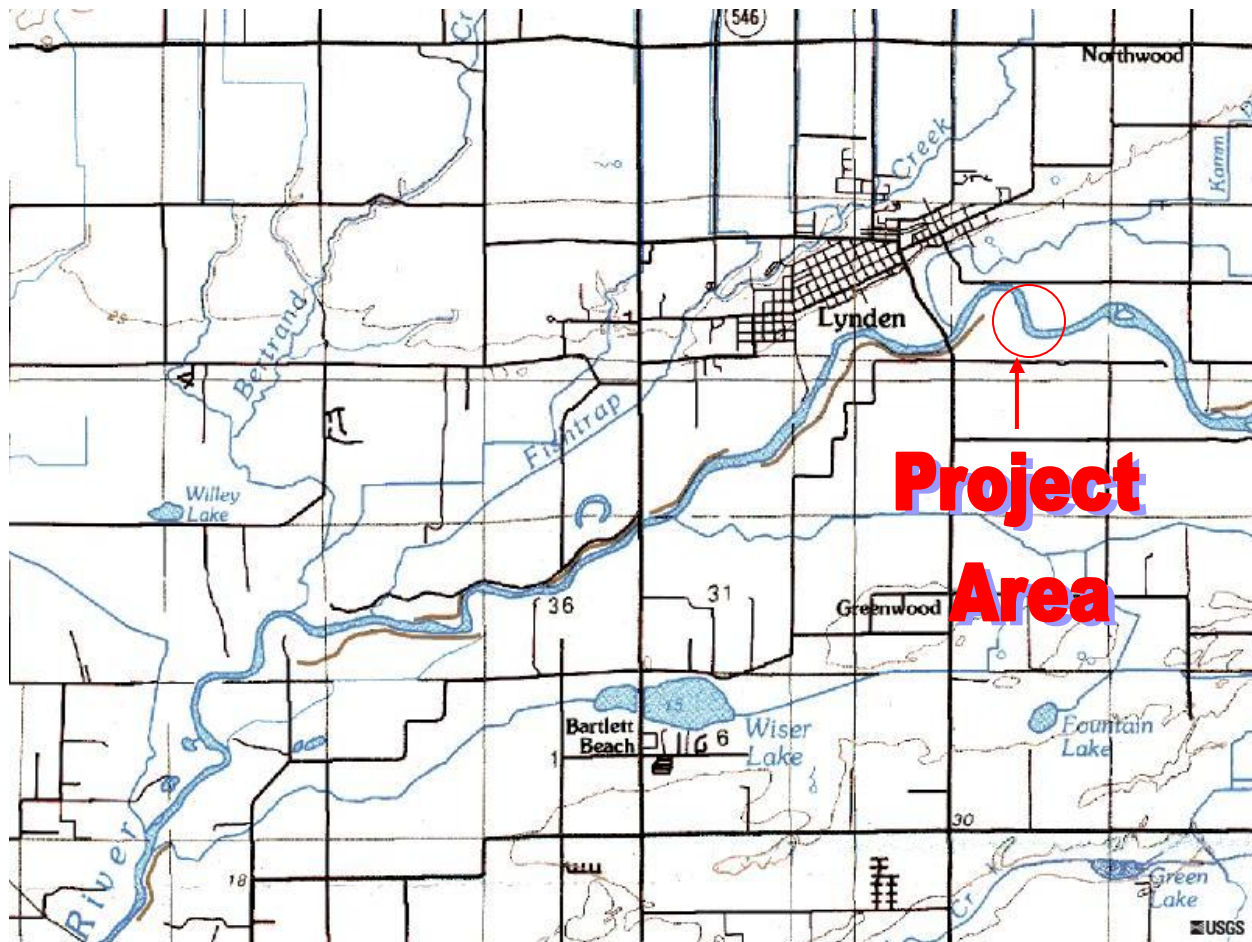


Figure 1. Project Location

1.2 Background

The project was originally constructed in the early 1900's, by local farmers, to protect crops, roads, and structures. Over the years, separable segments became interconnected to form a contiguous levee segment. The estimated completion of a contiguous segment is prior to 1936 when the Corps performed levee upgrades using Works Progress Administration (WPA) funding. After the WPA upgrades, Corps involvement have been limited to flood fights and levee rehabilitation.

The levee is constructed of earthen materials with grass and sod used for erosion control and provides protection to the City of Lynden Water Treatment and Intake Facility, which is the sole source of water for many local communities. There are no special features, drainage structures, or culverts along the levee segment. The levee was constructed with riverward and back slopes of about 2H: 1V.

Approximately 500 feet of the damaged section of the levee vegetated primarily with grass on both the riverward and landward slopes. The remaining 350 feet of damage is vegetated with several large red alders and cottonwood trees just landward of the ordinary high water level. These trees will be retained, and native shrubs will be planted landward of these existing trees.

The County performs annual maintenance including the removal of blackberries and thinning or removal of trees that would jeopardize levee integrity.

The Nooksack River rose above the zero damage flood stage in November 2004 resulting in approximately 1,000 feet of total levee damage. This includes both riverward toe and slope failure and landward overtopping scour. The damage includes 750 linear feet of severe erosion on the riverward slope and 1000 linear feet of damage on the landward slope due to overtopping. There is also an approximately 350 feet segment where sediment has built up on the levee face, causing a rotational failure. The County and Diking District constructed temporary measures during the flood using sandbags and field material. The armor rock was lost and the levee has been scoured to an almost vertical slope in the damaged segment.

1.3 Project Purpose and Need

The purpose of this project is to provide protection to the community and infrastructure from flood damage. This section of the levee sustained significant damage by erosion during a flood event in November 2004, and is in need of permanent repair.

There is a high potential that during the upcoming flood season around October, the river will overflow the levee again, posing a major threat to community, if no action is taken to contain the floodwaters.

1.4 Authority

The Hannegan Levee Rehab is authorized by Public Law 84-99 (USCA 701n). Corps rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by flood. The rehabilitated structure will normally be designed to provide the same degree of protection as the original structure. This project has been authorized as having *emergency* status as stated under the PL 84-99 regulations. The Corps has determined that if the levee is not repaired by the next flood event, an *imminent threat* of loss of private and/or public property exists.

2. DESCRIPTION OF THE PROPOSED ACTION

2.1 Proposed Action

The Seattle District Corps of Engineers will repair the erosion and essentially return the levee to its pre-flood condition. The proposed project consists of three types of repair; 1) Reshaping and replacing lost armor rock on the riverward slope and toe in areas of severe erosion for 650 linear feet, 2) Reshaping the eroded back slope which was scoured by overtopping for 1000 linear feet, and 3) Removing overburden from the riverward bench which reduces the driving force causing rotational failure for 350 linear feet. The riverward slope will be returned to 2H: 1V and a three-foot thick blanket of class IV riprap will be placed for armor rock. Material removed from the riverward bench will be used to repair scour on the back slope. A 5 ft deep by 10 ft wide weighted toe will be constructed. Construction will pull the damaged riverward slope back from the waterline and avoid removal of trees not within the levee prism.

The proposed action also includes substantial planting to increase the amount of existing native vegetation. For example, in the 350 ft bench segment of the levee, the overburden will be removed and the area will be planted in native shrubs (Appendix B). Planting of this bench area will require approximately 500 plants consisting of at least 3 of following species: snowberry, Indian plum, red elderberry, nootka rose, and thimbleberry.

3. ALTERNATIVES

Several other alternative actions were considered before the recommended alternative was selected. These alternatives include:

- the No-Action Alternative,
- the Non-Structural Alternative,
- the Setback Alternative
- the Recommended Alternative (repair the erosion).

In order for any alternative to be acceptable for consideration it must meet certain objectives. The alternative must afford flood protection similar to the rest of the levee segment, it must be economically justified, it should be environmentally acceptable, and it should minimize costs for both the sponsor and the Federal government.

3.1 No Federal Action

The No-Action alternative would provide no Federal action and leave the levee in its currently damaged condition with no further action to repair the levee damage. This alternative was quickly discarded because of the high potential of additional flood damages. This alternative could be considered environmentally acceptable because eventually the river could create a new channel that could provide spawning and rearing habitat for listed species. However, it could also provide an area that listed species could gain access to a field during a high water event that will subsequently be dewatered as the river flows decrease.

3.1.1 Effects of No Federal Action.

With no Corps assistance, the bank erosion would continue, reaching City of Lynden's Water Intake and eventually Hannegan Road. The river intake serves as the only potable water and fire protection supply for the City's 9,300 residents and businesses, in addition to supplying potable water to several surrounding water districts.

3.2 Non-Structural Alternative

The Non-Structural alternative would buy-out the existing farmland and would also relocate the water treatment and intake facility as well as the Hannegan Road. This alternative could be considered environmentally acceptable because eventually the river could create a new channel that could provide spawning and rearing habitat for listed species. However, it could also provide an area that listed species could gain access to a field during a high water event that will subsequently be dewatered as the river flows decrease. This alternative was quickly discarded because the costs were deemed to high.

3.3 Setback Alternative

The setback alternative would construct a new levee behind the current alignment. This levee would be constructed to match the pre-flood level of protection of the original levee (i.e. same levee height). This alternative could be considered environmentally acceptable because eventually the river could create a new channel that could provide spawning and rearing habitat for listed species. However, it could also provide an area that listed species could gain access to a field during a high water event that will subsequently be dewatered as the river flows decrease. This alternative was not selected because the costs were deemed significantly higher when compared to the costs for the selected alternative. In addition, this would require a landowner willing to sell land, a sponsor willing and able to purchase land, and require significantly more time for the Corps to complete the requirements necessary for changing the existing levee footprint.

3.4 Recommended Plan - Repair the Erosion Alternative

The Recommended Plan is the Repair the Erosion Alternative. This alternative would fix the riverward erosion and reshape both the riverward and back slope.

Drawings, maps, and other pertinent design information are located in Appendix C. Access to the site will not require the construction of a road. Equipment will travel from Polinder Road to the levee on the land owners existing dirt road. A temporary work area, 200 feet by 100 feet will be used for construction staging. This area is located on approximately 200 feet from the levee and is currently used as pasture. It is very likely that the temporary access will not require any roadbed aggregate/material. In the unlikely scenario of having saturated soils, the appropriate substrate will be placed on the access road/path to minimize erosion and provide a safe path for the equipment to travel on.

The riverward slope and the levee back slope will be constructed to have a 2H: 1V slope. The riverward slope will include a soil layer planted with willow cuttings just above the ordinary high water level, and the entire riverward slope will also have willows planted in a random fashion. In the 350 ft area that has accumulated excessive sediment, the sediment or overburden will be removed, and the area will be planted in native shrubs (Appendix B). Vegetating this area will require approximately 500 plants consisting of at least 3 of following species: snowberry (*Symphoricarpos albus*), Indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), nootka rose (*Rosa nutkana*), and thimbleberry (*Rubus parviflorus*). Any areas disturbed during construction including the back slope will be seeded with an appropriate species of grass.

4. AFFECTED ENVIRONMENT

4.1 General

In the Lynden area, the Nooksack River is a confined, single channel, low gradient system. The river provides spawning and rearing habitat for all salmon species utilizing the upper watershed. Some spawning occurs within this reach, principally above Lynden, with a few Chinook, pink, and chum using the increasing number of riffle areas. Coho are found year round in tributaries

including Fishtrap Creek that is downstream of the project area. Juvenile rearing could occur through the reach.

In the immediate project area, approximately 500 feet of the damaged section of the levee is vegetated primarily with grass on both the riverward and landward slopes. The remaining 350 feet of damage is vegetated with several large red alders and cottonwood trees just landward of the ordinary high water level. These trees will be retained, and native shrubs will be planted landward of these existing trees. The riparian vegetation serves as habitat for a variety of raptors, woodpeckers, passerines and water-oriented mammals.

The following threatened species are expected to be found in the project area:

Puget Sound Chinook salmon (2 essential stocks)
Bull trout
Bald Eagle

4.2 Hydrology, Soils and Topography

Topography of the project site is generally flat river floodplain, changing to a gently rolling landscape away from the river. The on-site soils are Mt. Vernon fine sandy loam, 0 to 2 percent slope (SCS, 1992), which is a very deep, moderately well drained soil found on river terraces and flood plains. Included in this unit are small areas of Briscot, Puyallup, Eliza, and Oridia soils; Shalcar soils in depressions, Riverwash, and Mt. Vernon Soils that have slopes greater than 2 percent. Of these soils, Briscot, Eliza, Oridia, Shalcar, and Riverwash soils are listed as hydric soils. Average precipitation is about 35 inches; average temperature is 50 degrees F. This soil usually has a seasonally high water table, and is at risk for flooding.

The Nooksack River is the main hydrological feature of the area. However, Fishtrap Creek enters on the right bank of the Nooksack approximately 2,000 feet downstream of the project site.

4.3 Vegetation

The project site is located in a coastal upland agricultural area. Vegetation at and near the vicinity of the project site is limited to that which occurs near the river. These include:

- Cottonwood (*Populus angustifolia*)
- red-osier dogwood (*Cornus sericea*),
- Nootka rose (*Rosa nutkana*),
- salmonberry (*Rubus spectabilis*),
- snowberry (*Magnoliopsida dilleniida*),
- red alder (*Alnus rubra*),
- Alaskan cedar (*Chamaecyparis nootkatensis*),
- Himalayan blackberry (*Rubus discolor*),
- Evergreen blackberry (*Rubus laciniatus*),
- Japanese Knotweed (*Fallopia japonica*), and
- a variety of native and non-native grasses.

The most prominent species at the project site are grass, alder, and cottonwood.

Currently the majority of both the riverward and landward slope of the levee in the project area is vegetated with grass. A few small red alders are present on the riverward slope on the most downstream section of the project area and approximately 350 feet of the most upstream section is vegetated with several large red alders and cottonwood trees.

4.4 Fish and Wildlife

The Nooksack River supports several species of salmon and trout. Trout species occasionally present include bull trout (*Salvelinus confluentus*), dolly varden (*Salvelinus malma Walbaum*), steelhead (*O. mykiss*), and cutthroat trout (*Salmo clarki*). The salmon species are Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), and perhaps sockeye (*O. nerka*).

The agricultural area surrounding the project site along the Nooksack River is frequented by a variety of wildlife species. Mammals include raccoon (*Procyon lotor*), Douglas squirrel (*Tamiasciurus douglasi*), little brown myotis (*Myotis lucifugus*), mink (*Carnivora mustelidae*) and Columbia black-tailed deer (*Odocoileus hemionus*). Bird species could include bald eagles (*Haliaeetus leucocephalus*), marbled murrelets (*Brachyramphus marmoratus marmoratus*), and chestnut-backed chickadee (*Parus rufescens*).

4.5 Threatened and Endangered Species

In accordance with Section 7(a) (2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Three species listed as either threatened or endangered are potentially found in the area of the project, and are listed in Table 4-1.

Table 4-1. Endangered Species in the Project Vicinity

| Scientific Name | Common Name | Status |
|---|----------------------------|------------|
| <i>Haliaeetus leucocephalus</i> | Bald Eagle | Threatened |
| <i>Oncorhynchus tshawytscha</i> | Puget Sound Chinook Salmon | Threatened |
| <i>Salvelinus confluentus</i> | Bull Trout | Threatened |

Information on known occurrences of candidate and threatened species in the project vicinity, and the impacts of the proposed projects on these species are addressed in Appendix B, Nooksack River Hannegan Levee Repair ESA documentation, dated June 2005.

Bull trout and Dolly Varden have been found to co-exist in streams in this region. Because these two species are closely related and have similar biological characteristics, the WDFW manages bull trout and Dolly Varden in the Nooksack together as "native char." Bull trout and Dolly Varden are very difficult to distinguish based on physical features and share similar life history traits and habitat requirements. Dolly Varden were not listed as a threatened species in the Coastal/Puget Sound Distinct Population segment when the USFWS listed bull trout in November 1999. However, the USFWS indicated on January 9, 2001 that Dolly Varden are being considered for listing as threatened due to their similarity of appearance to bull trout.

Bull trout was designated on June 10, 1998, as threatened in the contiguous U.S.A. (lower 48 states). Anadromous and resident bull trout spawn in the upper Forks of the Nooksack River. No bull trout stocks have been documented utilizing the project area for anything other than a migration corridor. Although bull trout have not been documented using the project area it is possible that they could be utilizing the area for rearing and feeding.

Puget Sound Chinook Salmon, an anadromous fish run in the Nooksack River area, is listed as threatened under the ESA. Chinook salmon in the Nooksack Basin are considered part of the Puget Sound Chinook salmon Evolutionarily Significant Unit (ESU) that was listed as threatened in March 1999. Three Chinook stocks have been identified in the Nooksack River Basin; the North Fork spring-run, the South Fork spring-run, and the Samish/Mainstem fall-run. The two spring-runs are distinct wild stocks of native origin while the Samish/Mainstem fall-run is a non-native introduced hatchery stock from the Green River.

Spring-run Chinook generally enter the Nooksack River between late March and early August, migrate rapidly upstream to the forks, hold there until July through early August, and spawn generally from August through October (Williams et al. 1975). Fall-run Chinook enter the river beginning in mid-July, migrate upriver to the spawning grounds or hatchery of origin through the end of September, and generally spawn from mid-September through mid-November (Williams et al. 1975). Chinook spawning is not known to occur in the project area. Juvenile salmonid smolts and fry Chinook migrate downstream through the project reach from mid-March through mid-July (Williams et al. 1975). Available feeding and predator avoidance habitat in the lower river, during downstream migration to the estuary and marine environment, is usually associated with slow velocities along the shoreline or around woody debris and along shallow margin habitats of cobble and gravel bars. Given the general lack of rearing habitat, high water velocities, and their migratory behavior, residence time of out-migrating juvenile Chinook in the project reach is likely less than a few days.

Coho salmon within the Puget Sound/Strait of Georgia ESU are presently classified as a "candidate" for ESA listing. Candidate species are species that may be proposed or are under review for possible listing as a threatened or endangered species in the future. In its ESA status review, the Biological Review Team stated that although many coho populations within this ESU are abundant and apparently stable, there are a number of factors (high harvest rates, habitat degradation, and hatchery production) that may lead to substantial risks to whatever native production remains. The Biological Review Team stated that if the population continues to decline, this ESU is likely to become endangered in the foreseeable future.

Coho salmon of the Nooksack are dominant Puget Sound contributors to U.S. and Canadian sport and commercial fisheries. Nooksack River coho salmon are harvested in pre-terminal fisheries, Bellingham Bay terminal fisheries, Lummi and Nooksack tribal river net fisheries, and river sport fisheries. The fish have been managed as a hatchery management unit under the Puget Sound Management Plan for nearly 27 years. Run size each year is large enough to provide both a harvestable surplus and a sufficient hatchery escapement. Between 1989 and 1999 the estimated total number of Nooksack coho salmon returning to Puget Sound has ranged from 43,300 to 244,600 with escapement estimates ranging from 7,950 to 99,000.

Three naturally spawning stocks of coho salmon were tentatively identified by WDFW (1992) in the Samish/Nooksack Basin region. These are the Nooksack, Samish, and North Puget Sound

Tributary stocks. Stock separation was primarily based on geographic distribution. Life history timing or morphological differences between the groups of fish do not exist or have not been observed. Within the Nooksack Basin, it is uncertain whether a naturally spawning Nooksack coho population exists that is sufficiently distinct from the hatchery population to be considered a native stock. In the Nooksack River Basin, natural escapement has been estimated to range from 500 to 5,500 since 1966. The highest escapement in this period (1987) corresponds to the second highest hatchery release to the system (6.2 million in 1985). Some biologists believe the native Nooksack coho stock is extinct, while others argue that there is high likelihood that a segment of the naturally spawning population retains sufficient genetic distinction to warrant its classification as a native stock. The NMFS has deferred any decisions on this ESU while additional information is gathered.

The Nooksack River coho stocks are typical of the Puget Sound/Strait of Georgia ESU with regard to their life history. Following emergence, the majority of stream-rearing juveniles spend eighteen months in fresh water before migrating downstream to saltwater as river flows increase with annual spring snowmelt and runoff. Following eighteen months in salt water, adult coho return to the Nooksack River and migrate upstream from August through early January. Spawning occurs in the upper mainstem and the accessible portions of the Forks from mid-November through January.

Coho habitat and life history functions in the project area are adult and juvenile migration and juvenile rearing (Whatcom County 1994). Neither coho spawning or extended juvenile rearing occur in the Action Area. Adults migrate through the project reach from mid July through mid-November (Williams et al. 1975). Juveniles migrate downstream through the reach from mid-April through mid-August (Williams et al. 1975). Although limited rearing may occur in the project reach, the habitat is generally not suitable for coho rearing and functions primarily as a transportation corridor to and from saltwater.

4.6 Cultural Resources

Swanton (1952:430) places the stretch of the river containing the project area within the traditional territory of the Nooksack Tribe, who belonged to the coastal division of the Salishan linguistic family. Ruby and Brown (1992:152-153) provide information that the name Nooksack was originally the name of one of the tribe's villages and is also a corruption of one of the tribe's bands. During the middle of the nineteenth century the tribe was settled in three main villages: one of the villages was located near present-day Deming, one near Goshen, and the third near Everson (Ruby and Brown 1992:153). Suttles provides information that most of the 20 or more Nooksack villages were located in the level valley below the confluence of the north and south forks of the river (1990:456).

Suttles shows a map (1990:454-455) of the Central Coast Salish area with two principal villages located near Lynden, "lčélus" (Number 81) is on the north or right bank of the river and "sq^wəhélic" (Number 82) on the south side or left bank of the river. Dailey provides information that a village was located near Lynden and that a smokehouse and a large communal fish trap were located there (2003:Upper Skagit-Sedro Woolley Section, No. 1). Smith (1950:339-340, Figure 1, Location B) shows a map with a village located on the right bank or north side of the Nooksack River near Lynden and describes it as "skā'älétc, at Lynden near Betells Creek" and stated that silver salmon came up the creek in large numbers." The name Betells Creek is not

shown on the 1952 U.S.G.S. Lynden, Wash. 7.5-Minute Topographic Map for the area. Russo shows the village site of “Skwehálich” on the right bank or north side of the Nooksack near Lynden. He describes “Skwehálich” as having a longhouse, a major traditional fishing location where coho salmon were caught, and containing a burial ground. A map compiled by Hollenbeck (1987:45, Map 2) shows the settlement of “Squa-ho-lish” located on the left bank or south side of the Nooksack River north of the 2005 Hannegan project area. The location shown is on the lower flood plain adjacent to the river where there is a maximum elevation of approximately 16.8 m (55 ft) amsl. The location does not seem probable as a winter village site due to seasonal flooding, but could have been used as a seasonal fishing locality.

The Library of Congress (2003) has several photographs of Indians taken near Lynden. One photograph is titled “Jim Yellakanim: Nooksack chief, ca. 1898” and the caption on the image is labeled “Jim, Chief of the Nooksacks.” The notes attached to the photograph state that “Yellakanim homesteaded in the upper Nooksack Valley, just outside the town of Lynden, Washington.” Another photograph from the same collection is labeled: “Group of Nooksack Indians near Lynden, Washington, circa 1900.”

An examination of the 1952 U.S.G.S. Lynden, Wash. 7.5-Minute Topographic Map indicates that the location shown on the Hollenbeck map for “Squa-ho-lish” (1987:45, Map 2) just downstream of the 2005 Hannegan project area, appears to mark the location of a transition of the Nooksack from a higher gradient braided channel pattern to a low gradient meandering river pattern. The beginning of shallow ripples associated with the river’s steeper gradient would likely have influenced the type of fishing technology employed by the Nooksack Tribe. The area may have marked the transition from a deep water fishing technology based on nets to more of a shallow water fishing technology based on traps.

The 1871 General Land Office (GLO) map for T. 40 N., R. 3 E., W.M., shows one settler’s name on the entire map and no wagon roads or farmsteads. That name was “McClelahans” and it is shown in the S.W. ¼ of Section 15 at the eastern edge of a large, apparent prairie, approximately two miles northeast of the Hannegan project area. From the eastern edge of the prairie the 1871 map shows an apparent trail extending to the northeast along the edge of the high ground adjacent to the flood plain and then continues on into the adjoining township. A short account of the history of Lynden written in 1889 (The Blaine Journal), stated that in 1870, when H.A. Judson and his family came to the area that would later become Lynden, he found two white men there that were married to Indian women of the Nooksack Tribe: “Jas. McClanahan and Joseph Emerling.” The “McClanahan” mentioned is apparently a variation of the “McClelahans” name shown on the 1871 GLO map

4.7 Water Quality

Warm water temperatures are a problem in the mainstem Nooksack River. Water temperatures in the Nooksack River near North Cedarville (RM 30.9) were in the “poor” category (warmer than 16 C) for 54% of the samples in 1996 and 1997 (data from USGS 2001). Conditions worsen downstream near Everson (RM 23.2) where 65% of the samples are warmer than 16 degrees Celsius and the peak temperature was 19.0 degrees Celsius. Near the mouth (RM 3.4), 60% of the samples were warmer than 16 C in July and August of 1996 and 1997 (data from USGS 2001). The entire length of the mainstem Nooksack River has a severely degraded riparian habitat, which contributes to water quality exceedances. Shade levels were remarkably poor with

no mainstem reaches achieving more than 40% of target shade levels, and most reaches had percent canopy cover in the 0 to 20% range (Coe 2001). Other causes include the surrounding agriculture, residential, and urban land use and the increased sedimentation from upstream sources. All of these water quality problems pose serious impacts to salmonids and result in a “poor” water quality rating for the mainstem Nooksack River.

4.8 Air Quality and Noise

Air quality in the Nooksack Basin is generally good. However, urban areas experience moderately degraded air quality during certain times of the year. Motor vehicles are the largest source of air pollutants in Whatcom County, although wood-burning stoves also contribute. Particulates, sulfur dioxide, ozone, and carbon monoxide are the pollutants of concern. High concentrations of these pollutants generally occur during the dry, late summer months when minimal wind conditions persist for long periods of time or during mid-winter thermal inversions.

Carbon monoxide, a product of incomplete combustion, is generated by automobiles and other fuel burning activities (e.g. residential heating with wood). The highest ambient concentrations of carbon monoxide tend to occur in localized areas such as major roadways and intersections during periods of low temperatures, light winds, and stable atmospheric conditions. Ozone is a highly reactive form of oxygen created by sunlight-activated chemical reactions of nitrogen oxides and volatile organic compounds. Unlike high carbon monoxide concentrations which tend to occur close to emission sources, ozone problems tend to be regional since ozone precursors can be transported far from their sources. Ozone precursors are primarily generated by motor vehicle engines.

This rural area is typically quiet. Typical existing noise consists of those generated by farm machinery, trucks, automobiles, and other internal combustion engines.

4.9 Utilities and Public Services

The levee protects the only intake structure for the City of Lynden’s water supply, Hannegan Road, 1815 acres of agricultural land, and a private residence.

4.10 Land Use

Land use in the project area is primarily rural residential and agricultural. There are scattered homes and farms in the surrounding area.

4.11 Recreation

Recreational uses of the Nooksack River at the project site are seasonal and moderate. They include but are not limited to sightseeing, wildlife observation, camping, photography, hiking, fishing, and boating.

4.12 Hazardous, Toxic, and Radioactive Waste

There are no known sites at the project locations that have any hazardous, toxic, or radioactive waste.

4.13 Aesthetics

Along the Nooksack River, the landscape elements of landform, vegetation, water, color, and related factors have been impaired by the levees and agricultural use of adjacent land. Scenery and visual attractions are limited to the river corridor over this reach of the river.

5. EFFECTS OF THE ALTERNATIVES

5.1 General

5.1.1 Proposed Alternative

There will be short-term impacts from construction of the replacement levee. The primary impact will be a temporary increase in noise due to construction equipment. The proposed project will not require in water work, as the upper portions of the existing levee will be pulled back to 2H: 1V. This will allow the Corps to begin the repair at the existing water line while pulling back the levee as it is constructed upward and landward; therefore, it will not require in water work. Because the work will be accomplished during the established work window (June 15 – August 31), the potential disruption of salmonid movement in the area will be minimized. If present, adult and juvenile salmonids may be temporarily displaced from this area due to the noise and movement of the construction equipment.

Due to the timing of construction (July 15-August 31) and design of the levee, no long-term impacts to the environment are anticipated. Any effects to fish and wildlife will be temporary and primarily occur during construction. Additional willow plantings and other native shrubs added to the site may increase some fish habitat values. Overall effects, both adverse and favorable, are insignificant.

5.1.2 No-Action Alternative

The No-Action alternative would not create any noise from construction equipment, it would not disrupt salmonid movement due to noise from construction equipment, it would not result in willows and other native shrubs being planted, and it would not provide the desired flood protection.

5.2 Hydrology, Soils and Topography

5.2.1 Proposed Alternative

Hydrologically, the repaired levee should return the area to its pre-flood river characteristics. The riverward slope will be returned to the pre-flood slope of 2:1 and the cross-sectional hydraulic capacity will remain the same. Frequency and depth of floodplain inundation of the site should be returned to pre-flood conditions. Overall project effects to hydrology, soils and topography will be insignificant.

Construction activities associated with the proposed project will result in approximately 10,000 tons (6,700 cubic yards) of Class IV riprap being added to the project site. This material will be placed on the riverward slope along an approximately 500 foot section of the levee. In addition, soils will be compacted in areas where heavy machinery will be operating such as the access road.

5.2.2 No-Action Alternative

The No-Action alternative would not return the area to its pre-flood river characteristics, the riverward slope will not be returned to the pre-flood slope of 2:1, it would not result in any rock being placed on the site and it would not provide the desired flood protection.

5.3 Vegetation

5.3.1 Proposed Alternative

Grass and weeds will be removed from the riverward slope along an approximately 500 foot section of the levee. A few small red alders may also need to be removed from this area.

The repaired levee and disturbed areas will be hydro-seeded after construction. In addition, one row of willows will be planted in a soil lift just above ordinary high water, and the entire riverward face will also be planted with willows in a random fashion in areas where the riverward slope is being repaired. The 350 ft bench area where rotational failure has occurred, the overburden will be removed and will be planted in native shrubs. This will require approximately 500 plants consisting of at least 3 of following species: snowberry, Indian plum, red elderberry, nootka rose, and thimbleberry. Overall project effects to vegetation will be insignificant as the existing vegetation is very limited. In addition, our replanting efforts will increase vegetation in the project area.

5.3.2 No-Action Alternative

The No-Action alternative would result in the levee maintaining the existing vegetation.

5.4 Fish and Wildlife

5.4.1 Proposed Alternative

Effects to fish and wildlife, if any, will be temporary and occur primarily during construction. The addition of the willow plantings and other native shrubs that will be added to the site may increase some fish habitat values. Overall effects, both adverse and favorable, will be insignificant.

5.4.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

5.5 Threatened and Endangered Species

5.5.1 Proposed Alternative

Bald Eagle

The project impacts are not a concern to nesting behavior due to construction timing. WDFW eagle experts have indicated that the young in nests in this area have typically fledged by the middle of July. No construction activity restrictions are identified in the ESA documentation due to known bald eagle ground feeding or perch areas being within close proximity to the project area. The ESA document addressed the expected effect of the project on bald eagles and made a “May affect, not likely to adversely affect” determination.

Bull Trout and Dolly Varden

Construction methods will reduce or eliminate the possibility of increasing turbidity during construction. No in-water work will occur, no significant vegetation will be removed, and substantial vegetation will be planted all of which limit potential impacts to bull trout. This determination is also supported by the low likelihood that bull trout would be present in the action area during construction due to the high water temperatures that often occur in the Nooksack River in late July and August. For example, water temperatures in the Nooksack River near North Cedarville (RM 30.9) were in the “poor” category (warmer than 16 C) for 54% of the samples in 1996 and 1997 (data from USGS 2001). Conditions worsen downstream near Everson (RM 23.2) where 65% of the samples are warmer than 16 degrees Celsius and the peak temperature was 19.0 degrees Celsius. Near the mouth (RM 3.4), 60% of the samples were warmer than 16 C in July and August of 1996 and 1997 (data from USGS 2001). Bull trout life history information in lower Puget Sound rivers has been reported by the Seattle District Corps of Engineers and can be found on our webpage. Of primary importance is that bull trout are not typically found at water temperatures greater than 18.0 Celsius. The temperatures that will likely be encountered in late July and August in 2005 will likely be at or near 18.0 Celsius as it has been predicted that the Nooksack will have low, and warm water this summer and fall. The ESA document addressed the expected effect of the project on bull trout and Dolly Varden and made a “May affect, not likely to adversely affect” determination.

Puget Sound Chinook Salmon

The procedure to repair the levee was designed to avoid or minimize potential "take" during construction by not encroaching upon the existing river channel, and not conducting any in-water construction. During placement of rock and material on the riverward slope, or if unusually high river levels occur, some rock may enter the water, causing a temporary increase in turbidity. The project is scheduled during the in-water construction period (June 15-August 31) to avoid periods of greatest Chinook vulnerability and highest expected use. In addition, no significant riparian vegetation will be removed and by the incorporation of willow plantings and other native shrubs into the design, the project will minimize potential effects to Chinook salmon.

Coho Salmon

The procedure to repair the levee was designed to avoid or minimize potential "take" during construction, including constructing the levee without requiring in-water work and scheduling the work to be conducted during the in-water construction period to avoid periods of greatest coho vulnerability and highest expected use.

The impact reduction measure of planting willows and other native shrubs, and not conducting any in-water work, as previously described for Chinook salmon may also benefit coho adults or juveniles during upstream or downstream migration.

5.5.2 No-Action

No effects anticipated as a result of the No-Action alternative.

5.6 Cultural Resources

5.6.1 Proposed Alternative

There are no properties listed in the National Register of Historic Places (NRHP) or the Washington Office of Archaeology and Historic Preservation (OAHP) electronic Historic Sites Inventory Database within the project area. The 2005 pedestrian archeological survey encountered good ground surface visibility and no evidence of cultural resources was observed. The floodplain in this area is extremely dynamic and historically the Nooksack River's channel has been constantly migrating back and forth across the floodplain. Due to these factors it is highly unlikely that cultural resources such as temporary Native American fishing camps, or fish weirs or traps would be preserved within the Area of Potential Effects (APE) for this project.

5.6.2 No-Action Alternative

In many cases levees protect cultural resources located adjacent and inland of them from river erosion. There are no known cultural resources within or near the project that could be affected should the project not be constructed and the levee fails during the upcoming flood season.

5.7 Water Quality

5.7.1 Proposed Alternative

Water quality will not be significantly impacted by construction activities as no in-water construction is planned or anticipated. Equipment will not enter the water and would remain on dry ground at all times. During construction, best management practices for equipment operation and storage and use of hazardous materials would be employed. Therefore, no leakage or spills of hazardous materials are expected to occur.

The Hannegan Levee Rehabilitation Project does not require Section 404/401 certification, as the work will not occur in Waters of the United States. In addition, a wetland investigation was conducted on June 7, 2005, which has determined that no wetlands are present and no wetlands will be impacted as a result of this project. Therefore, a section 401 Water Quality Certification is not required.

5.7.2 No-Action Alternative

It is likely that if the project is not constructed the levee will fail during the upcoming flood season, which could result in an increase in turbidity in the Nooksack River.

5.8 Air Quality and Noise

5.8.1 Proposed Alternative

Air quality would meet the standards as set forth by the Washington Department of Ecology and would not be permanently affected by the construction of the project. Noise would be intermittent at the site and varied depending on the frequency of trucks arriving with the material and construction of the identified features. Noise disruption factors were considered for their effect on threatened and endangered species in the ESA document.

During construction, there would be temporary and localized reduction in air quality due to emissions from heavy machinery operating during fill placement and grading. These emissions would not exceed EPA's de minimis threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan. Therefore, impacts would not be significant.

Ambient noise levels would increase slightly while construction equipment was operating. However, these effects would be temporary, localized, and occur only during daylight working hours. As a result, impacts would be insignificant.

5.8.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

5.9 Utilities and Public Services

5.9.1 Proposed Alternative

Failure to repair the levee erosion could have a serious impact on local commercial and private citizens if the water intake was to be taken out of service as well as having impacts to transportation if Hannegan Road was to be damaged or flooded for an extended period of time. Construction vehicles associated with the project would have a minimal disruption to vehicular transportation due to increased truck traffic merging, turning and traveling together with local traffic. Such a disruption would be temporary and highly localized, and therefore impacts would be insignificant.

5.9.2 No-Action Alternative

The No-Action alternative would not result in an increase in traffic on the local roads, and it would not result in providing the desired flood protection to the only intake structure for the City of Lynden's water supply, Hannegan Road, 1815 acres of agricultural land, and a private residence.

5.10 Land Use

5.10.1 Proposed Alternative

The proposed project will not cause any unique effects or impacts to land use. Effects to land use from the action will not change because the water supply will continue to enable grazing, farming and residential uses to continue with decreased potential for dangerous flooding.

5.10.2 No-Action Alternative

It is possible that if the project is not constructed agricultural land may be lost as the river could create a new channel through the existing fields, it could also destroy a home that is located nearby making the land unusable for residential use.

5.11 Recreation

5.11.1 Proposed Alternative

Effects to recreation values are insignificant because the site has been in a degraded condition compared with other nearby locations. Recreational resource and value uses are not changed.

5.11.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

5.12 Hazardous, Toxic, and Radioactive Waste

5.12.1 Proposed Alternative

There are no known sites at the project locations that have any hazardous, toxic, or radioactive waste; therefore, the Corps does not anticipate any effect.

5.12.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

5.13 Aesthetics

5.13.1 Proposed Alternative

Restoration of the constructed features of the project will not significantly affect the aesthetics of the site or the river.

5.13.2 No-Action Proposed Alternative Aesthetics

No effects anticipated as a result of the No-Action alternative.

6. UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse effects associated with this project included:

- (1) a temporary and localized increase in noise, which may disrupt wildlife in the area,
- (2) a temporary and localized disruption of local traffic by construction vehicles

7. COORDINATION

The following agencies and entities have been involved with the environmental coordination of this project:

- Washington Department of Ecology (Ecology)
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)
- Washington Department of Fish and Wildlife (WDFW)
- The Nooksack Tribe
- The Lummi Tribe
- Washington State Office of Archaeology and Historic Preservation
- Whatcom County

Coordination with the above listed agencies and tribes ranged from phone conversations, e-mail, to site visits and face to face meetings. Topics discussed during this coordination include project design, project construction timing, effects to listed species, and other environmental concerns.

The National Marine Fisheries Service (NMFS), Washington Dept of Fish and Wildlife (WDFW), Dept of Ecology (DOE), Whatcom County Public Works and biologists representing both the Nooksack tribe and Lummi tribe have visited the site.

8. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this evaluation. Future federal actions would require additional NEPA evaluation at the time of their development.

There are no significant cumulative effects that can be identified from implementation of this project. Because of frequent flooding in the area, the adjacent property is expected to remain agricultural and no development is anticipated in the vicinity of the project. There are no known plans to raise the levees to provide an increased level of flood protection. The levees would continue to be maintained at their current level.

The Corps is also proposing four other levee rehabilitation projects on the Nooksack River. The total length of shoreline that is being returned to the pre-flood condition is approximately 1.0 mile within a 33.0 mile stretch of the Nooksack River. Approximately 23,000 tons of class III riprap will be added to the banks of the river to replace the riprap that was eroded during the flood event. Projects that require in-water work may affect water quality. To minimize the effects to water quality all projects requiring in-water work will be monitored for turbidity. Construction will temporarily halt if the water quality standards are exceeded. Riparian vegetation will need to be removed to repair the levees, however, all projects include the planting of native vegetation, which will minimize the impacts to vegetation. Effects to fish and wildlife, if any, will be temporary and occur primarily during construction. The addition of the willow plantings and other native shrubs that will be added to the sites may increase some fish habitat values.

Cumulative impacts from local, short-term disturbances caused by the construction project (noise, emissions, traffic disruptions, etc.) will be minor and insignificant.

9. ENVIRONMENTAL COMPLIANCE

9.1 National Environmental Policy Act (NEPA) (42 USC 4321 et seq.)

In accordance with the National Environmental Policy Act, federal projects are required to declare potential environmental impacts and solicit public comment. The purpose of this document is to solicit public comment and fulfill the Corps of Engineers documentation requirements under the National Environmental Policy Act.

9.2 Endangered Species Act of 1973, as Amended (16 USC 1531-1544)

In accordance with Section 7(a) (2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. Prior to construction, ESA documentation was prepared for the project. The project incorporated impact reduction measures including constructing the project during the established construction window, and incorporating native shrubs into the project. A finding of May Effect, Not Likely to Adversely Effect was determined for all potentially occurring threatened or endangered species. The National Marine Fisheries Service (NMFS) and USFWS were notified of the project location and action. The ESA document is contained in Appendix C.

9.3 Clean Water Act, as Amended (33 USC 1251 et seq.)

According to the Code of Federal Regulations, Title 33, Section 323.4 (a) (2) levee repair is an activity not prohibited by or otherwise subject to regulation under Section 404 of the Clean Water Act. Therefore, a section 401 Water Quality Certification is not required.

9.4 Rivers and Harbors Act (33 U.S.C. 403)

The Rivers and Harbors Act of 1899 prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waters of the United States in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army. Under Section 10 of the Rivers and Harbors Act, a navigable waterway is defined as those waters that are subject to the ebb and flow of the tide shoreward to the mean high water mark. This act is not applicable to the proposed project because the levee repair does not restrict navigation or access to navigable waters.

9.5 Coastal Zone Management Act (16 U.S.C. 1451-1465)

The Coastal Zone Management Act of 1972 as amended (15 CFR 923) requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program.

The project simply restored the Federal erosion control project to a state comparable to its original condition before damage by the elements occurred. Work did not extend beyond the footprint of the original project, and did not cause substantial adverse effects to shore resources or the environment. Pursuant to Section 23.50.32 (b) of the Whatcom County Shoreline

Management Program, the Corps believes this proposal is exempt from substantial development permit requirements, making it consistent to the maximum extent practicable with the Whatcom County Shoreline Management Program.

9.6 National Historic Preservation Act) (16 USC 470 et seq., 110)

The proposed project has been determined to be a Federal undertaking of the type that could affect historic properties and must, therefore, comply with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA). Section 106 requires that Federal agencies identify and assess the effects of Federally assisted undertakings on historic properties and to consult with others to find acceptable ways to resolve adverse effects. Properties protected under Section 106 are sites, buildings, structures, or objects included on or eligible for listing on the National Register of Historic Places (NRHP). Eligible properties must generally be at least 50 years old, possess integrity of physical characteristics, and meet at least one of four criteria for significance. Regulations implementing Section 106 (36 CFR Part 800) encourage maximum coordination with the environmental review process required by the National Environmental Policy Act (NEPA) and with other statutes. The Washington State Archaeological Sites and Resources Act (RCW 27.53) may also apply.

The APE was defined as the project boundaries, including access roads. Materials used in the repair will come from existing quarries and borrow areas. A professional cultural resources reconnaissance survey of the APE was completed on 27 January 2005 with negative results. Archaeological monitoring was performed on 8 June 2005 for a wetland delineation shovel probe in the center of the proposed staging area with negative results. The cultural resources investigation did not produce any evidence of Native American prehistoric or historic-period activity within the APE.

As required under Section 106 of the NHPA, the Corps is coordinating with the Washington State Historic Preservation Officer (SHPO) and the Nooksack Tribe and Lummi Nation. The Corps has determined that no historic properties will be affected by the proposed project, but of this date has not received SHPO concurrence with its determination. In the event of an inadvertent discovery of cultural resources, construction will cease in the area of the find and the protocol detailed in the Corps' Construction Management Plan will be followed. The Construction Management Plan will contain wording to the effect that activities will cease in that area, a Corps archaeologist will initially identify the findings and if appropriate, Dr. Robert Whitlam of the Washington State OAH, the Nooksack Tribe, and the Lummi Nation will be contacted to arrange for evaluation and treatment of the material.

9.7 Clean Air Act As Amended (42 USC 7401, et seq.)

The Clean Air Act requires states to develop plans, called State Implementation Plans (SIP), for eliminating or reducing the severity and number of violations of National Ambient Air Quality Standards (NAAQS) while achieving expeditious attainment of the NAAQS. The act also required Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is defined as an action that will not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The U.S. Army Corps of Engineers has determined that emissions associated with this project will not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone).

9.8 Wild and Scenic Rivers Act (16 U.S.C. 1271-1287)

The Wild and Scenic Rivers Act (P.L. 90-542, as amended) selected rivers of the Nation, which, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values. The purpose of the Act is to preserve these rivers in their free-flowing condition, and protect them for the benefit and enjoyment of present and future generations.

An inventory, the National Wild and Scenic Rivers System, was established in December 1, 1992 and is published by the Department of the Interior and the Department of Agriculture, Forest Service and can be found at web site <http://www.nps.gov/rivers/wildriverslist.html#w>. The Nooksack River is not one of the selected rivers.

9.9 Migratory Bird Treaty Act and Migratory Bird Conservation Act (16 USC 701-715)

The project will be conducted in such a manner that migratory birds will not be harmed or harassed. The work will be outside the nesting season for most birds. Riparian vegetation suitable for nesting will be avoided, where possible. Any shrub removal will be limited to after July 1 to reduce impacts to nesting birds. Where potential nesting vegetation will be removed, adequate riparian vegetation for nesting sites exists upstream and downstream from the project site. Increased native vegetative planting may mitigate for minimal riparian vegetation that will be removed.

9.10 Fish and Wildlife Coordination Act, as Amended (16 USC 661 et seq.)

The Corps thoroughly coordinated this project with USFWS. USFWS is involved in project design and the Corps has provided the FWS with ESA documentation. The Corps does not transfer funds under the Fish and Wildlife Coordination Act for Emergency Projects. This project has emergency status therefore funds will not be transferred. The project is in compliance with this act.

9.11 Watershed Protection and Flood Prevention Act, as Amended (16 U.S.C. 1001 et seq.)

The Watershed Protection and Flood Prevention Act (Public Law 83-566) is commonly known as the Small Watershed Program. USDA-Natural Resources Conservation Service (NRCS) administers this program. The program authorizes Federal assistance to local organizations for planning and carrying out projects in watershed areas for conservation and use of land and water and flood prevention. This project is not a product of the Small Watershed Program and therefore this act is not applicable to this project.

9.12 Farmland Protection Policy Act (7 U.S.C. 4201, et seq.)

The Farmland Protection Policy Act (Public Law 97-98, Sec. 1539-1549) requires identification of proposed actions that would affect any lands classified as prime and unique farmlands. The project will not affect farmland classified as prime and unique. Repairing the levee will be consistent with this act.

9.13 Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)

RCRA was enacted in 1976 to address the issue of how to safely manage and dispose of municipal and industrial waste, regulate underground storage tanks (USTs) that store petroleum or hazardous substances, establish a system for managing solid (primarily nonhazardous) waste, including household waste, and set forth the framework for EPA's comprehensive waste management program. No abandoned waste has been observed during project site visits. No abandoned or buried hazardous waste or pesticides are anticipated to be discovered during construction. If any are discovered, they will be managed in accordance with RCRA or CERCLA requirements, as applicable. The project is in compliance with this act.

9.14 Executive Order 11988, Floodplain Management (24 May 1977)

Executive Order 11988 requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy of the floodplain, and to avoid direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains."

Section 8 of E.O. 11988 notes that the order does not apply to assistance provided for emergency work essential to save lives or protect public property, health, and safety. The project will not construct a change that would affect occupancy of the floodplain. By repairing the levee, the project is consistent with the act in reducing the risk of flood and minimizing the impact of floods on human safety, health, and welfare, while not changing floodplain occupancy conditions.

9.15 Executive Order 12898, Environmental Justice

Executive Order 12898 directs every federal agency to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. The project will not involve siting a facility that will discharge pollutants or contaminants, so no human health effects will occur. Therefore the project is in compliance with this act.

9.16 Executive Order 11990, Protection of Wetlands, May 24, 1977

The purpose of this project is to rehabilitate a damaged levee. No wetlands will be impacted by this project.

9.17 Treaty Rights

In the mid-1850's, the United States entered into treaties with a number of Native American tribes in Washington. These treaties guaranteed the signatory tribes the right to "take fish at usual and accustomed grounds and stations . . . in common with all citizens of the territory" [*U.S. v. Washington*, 384 F.Supp. 312 at 332 (WDWA 1974)]. In *U.S. v. Washington*, 384 F.Supp. 312 at 343 - 344, the court also found that the Treaty tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right comprehends certain subsidiary rights, such as access to their "usual and accustomed" fishing grounds. More than *de minimis* impacts to access to usual and accustomed fishing area violates this treaty right [*Northwest Sea Farms v. Wynn*, F.Supp. 931 F.Supp. 1515 at 1522 (WDWA 1996)]. In *U.S. v. Washington*, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The Ninth Circuit has held that this right also encompasses the right to take shellfish [*U.S. v. Washington*, 135 F.3d 618 (9th Cir 1998)]. Native Americans do harvest salmonids from the Nooksack River system.

The proposed project has been analyzed with respect to its effects on the treaty rights described above. We believe that:

- (1) The work will not interfere with access to usual and accustomed fishing grounds or with fishing activities or shellfish harvesting;
- (2) The work will not cause the degradation of fish runs and habitat; and
- (3) The work will not impair the Treaty tribes' ability to meet moderate living needs

Table 9.1. Summary of Consistency of Project With Applicable Laws, Regulations and Policies¹

| LAWS AND REGULATIONS RELATING TO THE PROPOSED ALTERNATIVES | REQUIREMENT SUMMARIZED | CONSISTENCY OF PREFERRED ALTERNATIVE |
|---|--|---|
| National Environmental Policy Act (NEPA) | Requires all federal agencies to consider the environmental effects of their actions and to seek to minimize negative impacts. | Consistent |
| Clean Air Act | Requires federal agencies to consult with state air pollution control agencies to assure that construction plans conform with local air quality standards | Consistent |
| Clean Water Act (CWA) | Requires federal agencies to protect waters of the United States. Disallows the placement of dredged or fill material into waters (and excavation) unless it can be demonstrated there are no reasonable alternatives. Requires federal agencies to comply with state water quality standards. | Covered by 33 CFR 323.4 (a) 2 |
| Rivers and Harbors Act | Prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waters of the U.S. in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army. | Not in Section 10 jurisdiction |
| Fish and Wildlife Coordination Act | Requires federal agencies to consult with the US Fish & Wildlife Service on any activity that could affect fish or wildlife. | Consistent |
| Endangered Species Act | Requires federal agencies to protect listed species and consult with US Fish & Wildlife or NMFS regarding the proposed action. | Consistent |
| National Historic Preservation Act | Requires federal agencies to identify and protect historic properties. | Completed |
| Wild and Scenic Rivers Act | Requires that "In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas." | Consistent |
| Executive Order 11988, Floodplain Management | Requires federal agencies to consider how their activities may encourage future development in floodplains. | Consistent |

| | | |
|---|--|--|
| Migratory Bird Treaty Act and Migratory Bird Conservation Act | Requires not harming or harassing migratory birds. | Consistent |
| Watershed Protection and Flood Prevention Act, as Amended | Authorizes Federal assistance for implementing projects in watershed areas and use of land and water and flood prevention. | Consistent |
| Farmland Protection Policy Act | Requires identification of proposed actions that would affect any lands classified as prime and unique farmlands. | Consistent |
| Resource Conservation and Recovery Act (RCRA) | Requires managing hazardous materials and waste in accordance with RCRA requirements. | Consistent |
| Executive Order 11990, Protection of Wetlands | Requires federal agencies to protect wetland habitats. | Consistent |
| Coastal Zone Management Act (CZMA) | Requires federal agencies to comply with state and local plans to protect and enhance coastal zones and shorelines. | Consistent to the maximum extent practicable |
| Washington Hydraulic Code | Requires proponents of developments, etc. to protect state waters, wetlands and fish life. | Not Applicable |
| Whatcom County Flood Hazard Reduction Plan | Requires implementing projects that would result in innovative, comprehensive and permanent solutions to flooding problems using environmentally sensitive techniques. | Not Applicable |
| Treaty Rights | Require that the project has been analyzed with respect to its effects on the treaty rights. | Consistent |

10. CONCLUSION

Based on the above analysis, the levee rehabilitation project will not be a major Federal action significantly affecting the quality of the human environment, and therefore will not require preparation of an environmental impact statement.

11. REFERENCES

Corps of Engineers. November 13, 1986. *Final Rule for Regulatory Programs of the Corps of Engineers*. Federal Register 51(219): 41206-41254.

Corps of Engineers and Environmental Protection Agency. August 25, 1993. *Clean Water Act Regulatory Programs*. Federal Register 58(163): 45008-45038.

Environmental Protection Agency. November 30, 1993. *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*. Federal Register 58(228): 63214

Environmental Protection Agency. 2000. *SITEINFO Query Form*. <<http://www.epa.gov/r10earth/r10gis/r10site.html>>.

Hollenbeck, Jan L. 1987. *A cultural Resource Overview: Prehistory, Ethnography, and History, Mt. Baker-Snoqualmie National Forest*. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. Seattle, Washington.

Ruby, Robert H. and John A. Brown 1986. *A Guide to the Indian Tribes of the Pacific Northwest*. University of Oklahoma Press, Norman.

Suttles, Wayne 1990. Central Coast Salish. In, *Northwest Coast*, edited by Wayne Suttles, pp. 453-475. Handbook of North American Indians, vol. 7, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Swanton, John R. 1952. *The Indian Tribes of North America*. Smithsonian Institution, Bureau of American Ethnology, Bulletin 145. U.S. Government Printing Office, Washington D.C.

Washington Department of Ecology. 2000. *Ecology's Final 1998 List of Impaired and Threatened Waterbodies - the 303(d) List*. <<http://www.wa.gov/ecology/wq/303d/index.html>>.

Williams et al. (1975). *A Catalog of Washington Streams and Salmon Utilization*, Vol. 1, Puget Sound Region. Washington Department of Fisheries. Olympia. W.A.

13. APPENDICES

Appendix A

Requests for Corps Assistance and Other Correspondence

**WHATCOM COUNTY
PUBLIC WORKS DEPARTMENT**

JEFFREY M. MONSEN, P.E.
Director



River and Flood Division

322 N. Commercial Street, Suite 120
Bellingham, WA 98225
Phone: (360) 676-6876, (360) 398-1310
Fax: (360) 738-2468

December 15, 2004

Doug Weber
US Army Corps of Engineers
P.O. Box C-3755
4735 E. Marginal Way S.
Seattle, WA 98124-2255

Re: Levee Repair Work in Whatcom County

Dear Mr. Weber:

During the recent flooding in Whatcom County on November 24th, 2004, multiple levees were damaged along the Nooksack River and its tributaries. They include the following:

- The "Williams Levee" - an approximately 100-foot section of this levee located on the left bank of the Nooksack River near Everson was damaged.
- The "Sande-Williams Levee" - an approximately 200-foot section of this levee located on the right bank of the Nooksack River near Deming was damaged.
- The "Right Bank Bertrand Creek Levee" - an approximately 100-foot section of this levee located on the right bank of Bertrand Creek near Ferndale failed.
- The "Hannegan Levee" - an approximately 500-foot section of this levee located on the left bank of the Nooksack River near Lynden was damaged.
- The "Bylsma Levee" - an approximately 500-foot section of this levee located on the left bank of the Nooksack River near Lynden was damaged.
- The "Vanderpol Levee" - the upstream segment of this levee located on the left bank of the Nooksack River near Lynden was damaged.
- The "Twin-View Levee" - a portion of this levee located on the left bank of the Nooksack River near Everson was damaged.

We are officially requesting assistance under the PL84-99 Program in implementing repair projects at these locations. The County will act as the local sponsor and provide all necessary lands, rights-of-way, and easements for these projects.

If you have any questions or need any additional information please don't hesitate to contact me at (360) 676-6876.

Sincerely,

A handwritten signature in dark ink, appearing to read "James E. Lee".

James E. Lee, P.E.
River & Flood Engineer

Appendix B

ESA Consultation Document

NOOKSACK RIVER HANNEGAN LEVEE
Rehabilitation of Flood Control Works
Whatcom County, Washington
ESA Consultation Document
July 2005

1.0 Introduction

This ESA Consultation Document evaluates the environmental effects of the proposed repair and reconstruction of Hannegan levee located on the Nooksack River near Lynden, Washington. This levee is on the left bank at approximately River Mile 19.6, approximately ½ mile upstream of the Hannegan Road Bridge. The levee protects the only intake structure for the City of Lynden's water supply, Hannegan Road, 1815 acres of agricultural land, and a private residence. The Nooksack River rose above the zero damage flood stage in November 2004 resulting in significant erosion to approximately 750 linear feet of the levee on the riverward slope and 1000 linear feet on the landward slope. The severe erosion resulted in armor rock being lost and the levee has been scoured to an almost vertical slope in the damaged segment. The Corps has determined that the levee is in need of emergency repair. The proposed project consists of rebuilding the riverward slope back to 2H: 1V, reshaping the back slope, armoring the riverward slope, and adding native shrubs including willow plantings. One row of willows will be planted in a soil lift just above ordinary high water, and the entire riverward face will also be planted with willows in a random fashion in areas where the riverward slope is being repaired. The 350 ft bench area where the overburden will be removed will be planted in native shrubs. This will require approximately 500 plants consisting of at least 3 of following species: snowberry (*Symphoricarpos albus*), Indian plum (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), nootka rose (*Rosa nutkana*), and thimbleberry (*Rubus parviflorus*).

If no action is taken to contain the floodwaters, there is a high potential that during the upcoming flood season, the river would overflow the levee again, posing a major threat to the water supply intake and other property.

The levee is located on the Left Bank of the Nooksack River extending from about river mile 18.0 to 19.6, near the town of Lynden. The damaged section extends approximately 750 linear feet along an outside bend of the river. The levee was constructed of earthen materials with a riverward and back slopes of about 2H: 1V. As stated previously, this section has been scoured to an almost vertical slope at present. The proposed project consists of rebuilding the riverward slope back to 2H: 1V, reshaping the back slope, armoring the riverward slope, and adding native shrubs along with willow plantings. The proposed levee rehabilitation will not encroach upon the current wetted river channel (see construction drawings).

The proposed work is not expected to significantly affect the quality of the human environment because the damaged section of shoreline will be returned to the pre-flood condition. Construction will employ best management practices to minimize potential adverse effects to aquatic and terrestrial resources.

The potential impacts to species listed under the Endangered Species Act (ESA) and those candidate species as a result of the Nooksack River Hannegan Levee Repair project are addressed in this ESA Consultation Document. There are two species listed by the U.S. Fish and

Wildlife Service (USFWS) under the ESA as threatened; bull trout (*Salvelinus confluentus*), and bald eagles (*Haliaeetus leucocephalus*). The National Marine Fisheries Service (NMFS) identified one species under ESA listed as threatened; Puget Sound chinook salmon (*Oncorhynchus tshawytscha*), and one candidate species; Puget Sound / Georgia Strait ESU of coho salmon (*Oncorhynchus kisutch*) as utilizing the proposed project location.

2.0 Effects of the Proposed Action and Effects Determinations

2.1 Chinook Salmon

A review of the 2002 update to the Salmonid Stock Inventory (WDFW), 2002; at <http://wdfw.wa.gov/fish/sasi>) documents Chinook salmon spawning habitat upstream of the project site in the South Fork Nooksack River, North Fork Nooksack River, and at the intersection of the Middle Fork and Mainstem Nooksack River. The proposed project **may affect, but is not likely to adversely affect** Chinook salmon and is not likely to adversely modify proposed critical habitat for Chinook. The procedure to repair the levee was designed to avoid or minimize potential "take" during construction by not encroaching upon the existing river channel, and not conducting any in-water construction. During placement of rock and material on the riverward slope, or if unusually high river levels occur, some rock may enter the water, causing a temporary increase in turbidity. The project is scheduled during the in-water construction period (June 15-August 31) to avoid periods of greatest Chinook vulnerability and highest expected use. In addition, no significant riparian vegetation will be removed and by the incorporation of willow plantings and other native shrubs into the design, the project will minimize potential effects to Chinook salmon.

2.2 Bull Trout

Bull trout in the Nooksack River system were identified by the 1998 Washington State Salmonid Stock Inventory as spawning well upstream of the project location. The geographically closest stock is the Lower Nooksack stock, which occurs in the Middle Fork of the river upstream of its intersection with the mainstem river. No bull trout stocks have been documented utilizing the project area for anything other than a migration corridor. Although bull trout have not been documented using the project area it is possible that they could be utilizing the area for rearing. The proposed project **may affect, but is not likely to adversely affect** bull trout or modify critical habitat for this species. Best management practices to reduce or eliminate the possibility of turbidity during construction will be implemented (Table 1.). No in-water work is likely to occur, no significant vegetation will be removed, and substantial vegetation will be planted all of which limit potential impacts to bull trout. This determination is also supported by the low likelihood that bull trout would be present in the action area during construction due to the high water

Table 1. BMPs to be used during construction.

| |
|--|
| 1. Equipment that will be used near the water will be cleaned prior to construction. |
| 2. Work is planned to be conducted during a period of low flow. |
| 3. Temporary sediment traps will be used to minimize turbidity where possible. |
| 4. Biodegradable hydraulic fluids will be used for machinery at the site. |
| 5. Refueling will occur on the backside of the levee. |
| 6. Construction equipment will be regularly checked for drips or leaks. |
| 7. At least one fuel spill kit with absorbent pads will be onsite at all times. |
| 8. Drive trains of equipment will not operate in the water. |
| 9. At least one biologist will be onsite during in-water/near water construction. |

temperatures that often occur in the Nooksack River in late July and August. For example, water temperatures in the Nooksack River near North Cedarville (RM 30.9) were in the “poor” category (warmer than 16 C) for 54% of the samples in 1996 and 1997 (data from USGS 2001). Conditions worsen downstream near Everson (RM 23.2) where 65% of the samples are warmer than 16 degrees Celsius and the peak temperature was 19.0 degrees Celsius. Near the mouth (RM 3.4), 60% of the samples were warmer than 16 C in July and August of 1996 and 1997 (data from USGS 2001). Bull trout life history information in lower Puget Sound rivers has been reported by the Seattle District Corps of Engineers and can be found on our webpage. Of primary importance is that bull trout are not typically found at water temperatures greater than 18.0 Celsius. The temperatures that will likely be encountered in late July and August in 2005 will likely be at or near 18.0 Celsius.

2.3 Bald Eagles

Since construction activities will not occur during the nesting season, it will not affect nesting habitat or behaviors, prey, and only minor disruptions to foraging activities are expected during construction, the proposed project **may affect, but is not likely to adversely affect** the bald eagle.

2.4 Essential Fish Habitat

The project area has been designated as Essential Fish Habitat (EFH) for various life stages of four species of Pacific salmon.

Freshwater Essential Fish Habitat (EFH) for Pacific salmon consists of 4 major components: (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; (4) adult migration corridors and adult holding habitat. Important features of essential habitat for spawning, rearing, and migration include adequate: (1) substrate composition; (2) water quality (e.g. dissolved oxygen, nutrients, temperature, etc.); (3) water quantity, depth and velocity; (4) channel gradient and stability; (5) food; (6) cover and habitat complexity (e.g. large woody debris, pools, channel complexity, aquatic vegetation, etc.); (7) space; (8) access and passage; and (9) flood plain and habitat connectivity.

The Corps has determined that the proposed action will not reduce the quality and/or quantity of EFH for Pacific salmon. No adverse effects to EFH are expected to result from the proposed action as there will not be any encroachment into the existing river channel, no significant vegetation will be removed, and native shrubs and willow whips will be incorporated into the repair design.

3.0 Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this evaluation. Future Federal actions would require separate Section 7 consultation at the time of their development.

There are no significant cumulative effects that can be identified from implementation of this project. Because of frequent flooding in the area, the adjacent property is expected to remain agricultural and no development is anticipated in the vicinity of the project. There are no known plans to raise the levees to provide an increased level of flood protection. The levees would continue to be maintained at their current level.

The Corps is also proposing four other levee rehabilitation projects on the Nooksack River which are being addressed as individual Section 7 actions. The total length of shoreline that is being returned to the pre-flood condition is approximately 1.0 mile in a 33.0 mile stretch of the Nooksack River. Approximately 23,000 tons of class III riprap will be added to the banks of the river to replace the riprap that was eroded during the flood event. Projects that require in-water work may affect water quality. To minimize the effects to water quality all projects requiring in-water work will be monitored for turbidity. Construction will temporarily halt if the water quality standards are exceeded. Riparian vegetation will need to be removed to repair the levees, however, all projects include the planting of native vegetation, which will minimize the impacts to vegetation. Effects to fish and wildlife, if any, will be temporary and occur primarily during construction. The addition of the willow plantings and other native shrubs that will be added to the sites may increase some fish habitat values.

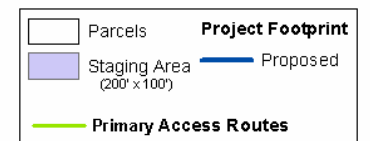
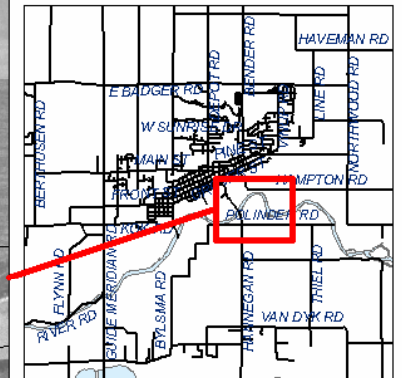
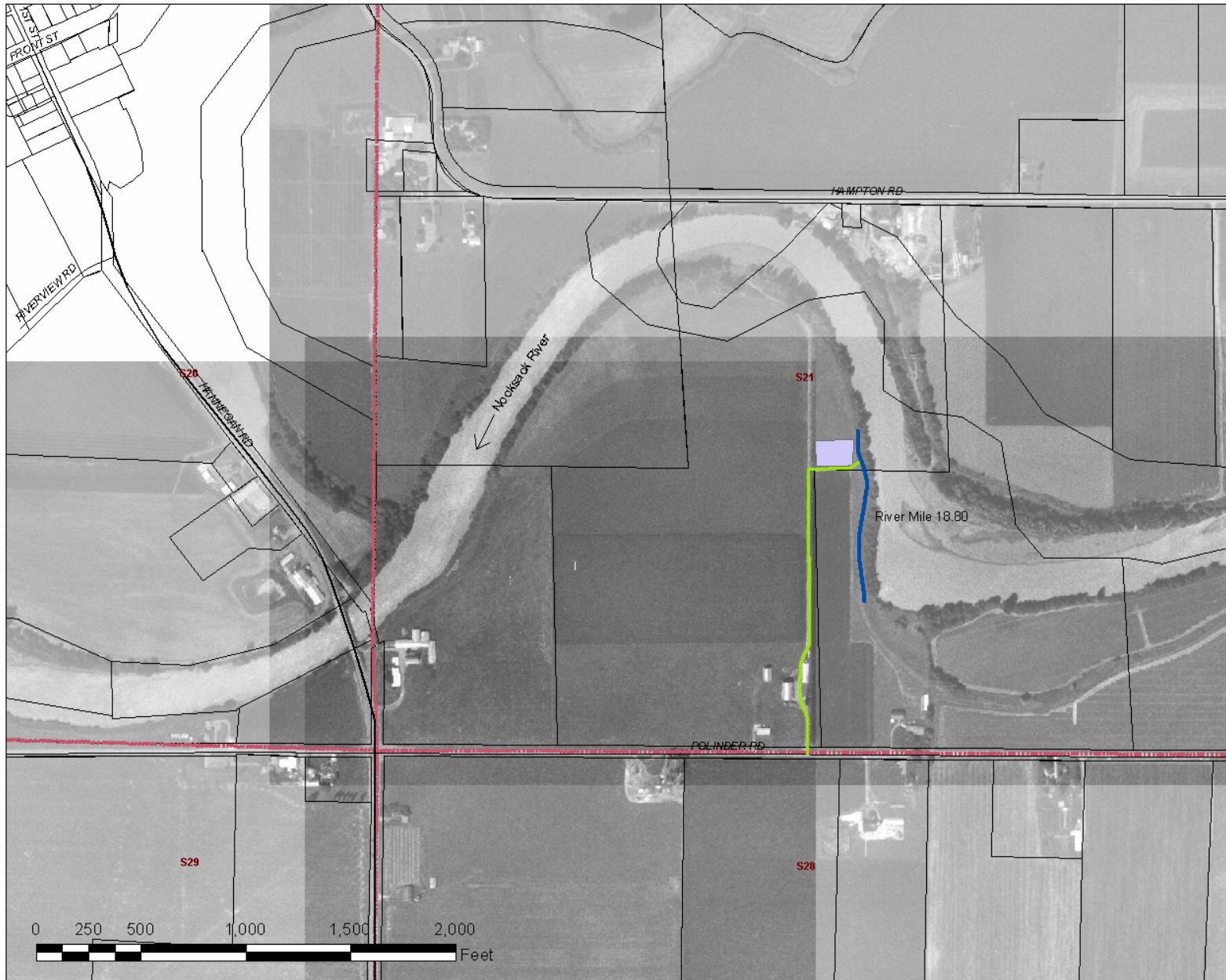
Cumulative impacts from local, short-term disturbances caused by the construction project (noise, emissions, traffic disruptions, etc.) will be minor and insignificant.

Appendix C

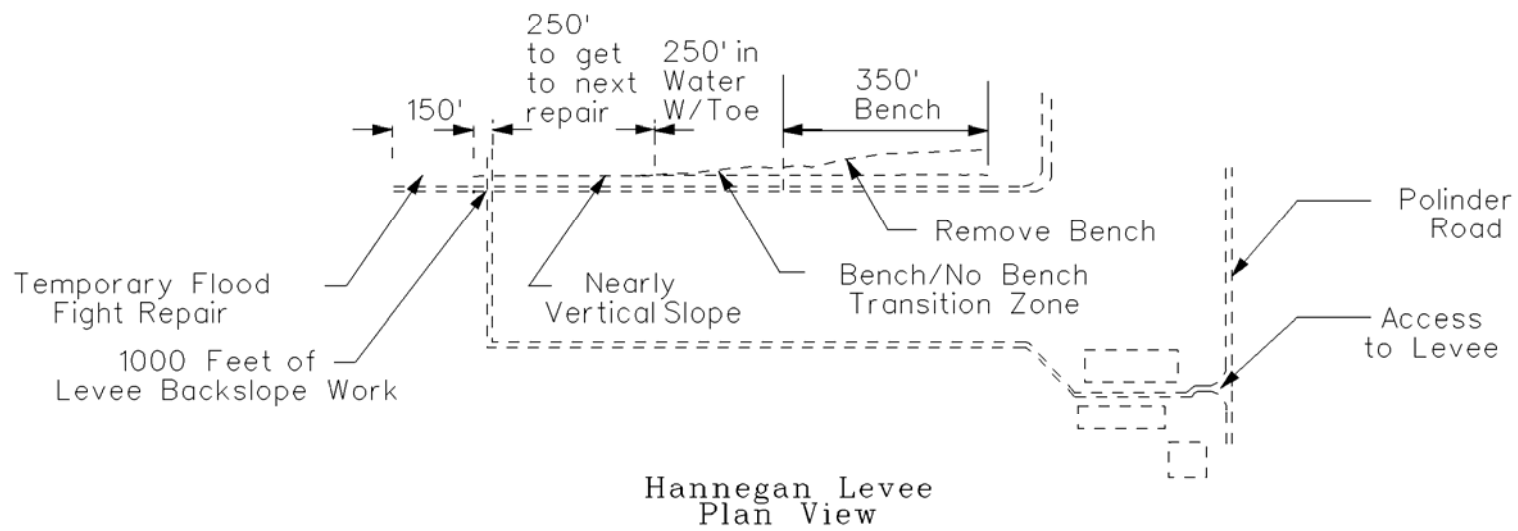
Project Map and Drawing

Hannegan Levee NSK 05-05

Whatcom County,
Washington
T40N R03E W.M.



| | | |
|-------------------------|----------------|---------------|
| Project: Hannegan Levee | Dwn: DesJardin | Date: Feb 05 |
| Subject: Plan View | Chkd: Kaiser | Sheet: 1 of 2 |



Appendix D

Draft FONSI

REHABILITATION OF FLOOD CONTROL WORKS HANNEGAN LEVEE
WHATCOM COUNTY, WASHINGTON

DRAFT FINDING OF NO SIGNIFICANT IMPACT

1. Background. The Seattle District, U.S. Army Corps of Engineers (Corps) is proposing to repair and reconstruct Hannegan levee, located on the Nooksack River near Lynden, Washington in August 2005. The levee is located on the Left Bank of the Nooksack River extending from about river mile 18.0 to 19.6, near the town of Lynden. The levee protects the only intake structure for the City of Lynden's water supply, Hannegan Road, 1815 acres of agricultural land, and a private residence.

The Nooksack River rose above the zero damage flood stage in November 2004 resulting in significant erosion to approximately 750 linear feet of the levee on the riverward slope and 1000 linear feet on the landward slope. The severe erosion resulted in armor rock being lost and the levee has been scoured to an almost vertical slope in the damaged segment. In December 2004, Whatcom County Public Works Department requested assistance under the PL84-99 Program in implementing a repair project at this location. The Corps has determined that the levee is in need of permanent repair and is proposing to repair approximately a 1000-foot section of the levee. The U.S. Army Corps of Engineers, Seattle District, is proposing the following project under the authority of Public Law 84-99 (33 USCA 701n).

2. Purpose and Need. The purpose of this project is to provide protection to the community and infrastructure from flood damage. This section of the levee sustained significant damage by erosion during a flood event in December 2004, was temporarily repaired and is in need of permanent repair.

There is a high potential that during the upcoming flood season around October, the river would overflow the levee again, posing a major threat to the community, if no action is taken to contain the floodwaters.

3. Action. The proposed project consists of three types of repair; 1) Reshaping and replacing lost armor rock on the riverward slope and toe in areas of severe erosion for 650 linear feet, 2) Reshaping the eroded back slope which was scoured by overtopping for 1000 linear feet, and 3) Removing overburden from the riverward bench which reduces the driving force causing rotational failure for 350 linear feet. The riverward slope will be returned to 2H: 1V and a three-foot thick blanket of class IV riprap will be placed for armor rock. Material removed from the riverward bench will be used to repair scour on the back slope. A 5 ft deep by 10 ft wide weighted toe will be constructed. Construction will pull the damaged riverward slope back from the waterline and avoid removal of trees not within the levee prism.

CENWS-PM-PL-ER

SUBJECT: Rehabilitation of Flood Control Works Hannegan Levee, Whatcom County,
Washington

4. Summary of Impacts. The primary impacts of this action will be the temporary and localized increase in noise in the construction area and the temporary removal of very little amount of hillside vegetation from the bank. To minimize the project impacts to vegetation, the project area will be replanted with native shrubs.

The attached draft environmental assessment provides an evaluation of the proposed levee rehabilitation project and its effects on the existing environment.

No significant adverse impacts to fish and wildlife habitat, air quality, noise, esthetics, historical resources, cultural resources, or the social or economic environment are anticipated as a result of the project.

5. Finding. For the reasons described above, I have determined that the levee rehabilitation project will not result in significant adverse environmental impacts. The project will not constitute a major Federal action with significant impacts on the environment and, therefore, does not require an environmental impact statement.

Date

Debra M. Lewis
Colonel, Corps of Engineers
District Engineer